The Commonwealth of Massachusetts

DEPARTMENT OF PUBLIC UTILITIES

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Consolidated Petitions of New England Telephone and Telegraph Company d/b/a Bell Atlantic-Massachusetts, Teleport Communications Group, Inc., Brooks Fiber Communications of Massachusetts, Inc., AT&T Communications of New England, Inc., MCI Telecommunications Company, and Sprint Communications Company, L.P., pursuant to Section 252(b) of the Telecommunications Act of 1996, for arbitration of interconnection agreements between Bell Atlantic-Massachusetts and the aforementioned companies.

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I. INTRODUCTION

This arbitration proceeding is held pursuant to the Telecommunications Act of 1996 ("the Act"). On December 4, 1996, the Department issued an order in this proceeding ("Phase 4 Order") which set forth our rulings with regard to the method to be used by New England Telephone and Telegraph Company d/b/a Bell Atlantic ("Bell Atlantic," formerly "NYNEX") in carrying out total element long-run incremental cost ("TELRIC") studies to determine the prices to be charged by Bell Atlantic to competing local exchange carriers ("CLECs") for the use of unbundled network elements ("UNEs"). The method employed by the Department was the one set forth by the Federal Communications Commission ("FCC") in its First Report and Order dated August 8, 1996 ("Local Competition Order"). On February 5, 1997, in response to motions for clarification, recalculation, and reconsideration, the Department issued a second order ("Phase 4-A Order") with regard to the TELRIC studies and directed Bell Atlantic to submit cost studies in compliance with that order. Most features of that compliance filing were approved by the Department on May 2, 1997 ("Phase 4-B Order").

Bell Atlantic's initial TELRIC studies and compliance filing did not include a TELRIC study for the provision of physical collocation of competing carriers' equipment in a Bell Atlantic central office. Such collocation is required by the Act, and the Department has addressed certain technical requirements of collocation in our Order of December 4, 1996 ("Phase 3 Order"). Bell Atlantic had stated earlier in this proceeding that a collocation TELRIC study would be presented in a later filing. That filing was submitted by Bell Atlantic on March 6, 1997.

On March 20, 1997, the arbitrator, Paul F. Levy, held a technical conference with the parties to review Bell Atlantic's filing, and a procedural schedule was set forth for formal review of the collocation cost study. That schedule included discovery, formal hearings, and an April 4, 1997, tour of the Bell Atlantic Franklin Street central office to view a collocation space and related facilities. Hearings were held on this matter on April 28 and April 29, 1997. Bell Atlantic presented one witness, Robert Grenier, staff director for service costs.

On May 19, 1997, Bell Atlantic requested an opportunity to submit a revised collocation cost study which, it said, would reflect more recent experience in building collocation facilities. That revised study was filed on July 3, 1997. After additional discovery, Bell Atlantic's witness, Mr. Grenier, was examined on this revised study at a hearing on October 16, 1997.

On October 31, 1997, MCI Telecommunications Corporation ("MCI") filed testimony on this matter, presenting as witnesses Roy Lathrop, senior manager in MCI's office of policy liaison in the public policy and governmental advocacy department, and Rick Bissell, a telecommunications consultant. Messrs. Lathrop and Bissell were examined during a hearing on December 15, 1997.

On December 31, 1997, Bell Atlantic filed rebuttal testimony by Mr. Grenier. Mr. Grenier was then cross-examined on February 3, 1998, at which time MCI offered the surrebuttal testimony of Mr. Bissell, which was followed by rejoinder testimony by Mr. Grenier. Initial briefs were filed by Bell Atlantic, MCI, and AT&T Communications of New England ("AT&T") on February 27, 1998. Reply briefs were submitted on March 6, 1998.

II. THE BELL ATLANTIC METHOD

The Act provides that Bell Atlantic must make space available in central office buildings to CLECs for collocation of equipment necessary for interconnection and access to UNEs and that an incremental costing method shall be used to price this service to the CLECs. 47 U.S.C.A. §§ 251(c)(6), 252(d)(1). Bell Atlantic has proposed a TELRIC study which includes costs for preparing suitable building sites, construction of the collocation cage area, extending the CLEC's cables to the collocation area, and providing cable within the building. Cost figures are presented for the four density zones established in the Phase 4 Order -- metro, urban, suburban, and rural (Exh. BA-C-7, at 1).

The cost study prepared by Bell Atlantic yields three categories of costs. The first category, nonrecurring costs ("NRCs"), covers the cost of installing three sizes of collocation cages (300 square feet, 100 square feet, and 20 square feet of additional space beyond an initial order for each). NRCs are also developed for the point of termination ("POT") frame, or POT bay, the piece of equipment at which the CLEC and Bell Atlantic cables meet. The second category, recurring annual costs, includes an annual building cost (per square foot) and DC power (per amp requested by the CLEC). Recurring costs are also developed for the POT frame. In addition, Bell Atlantic provides recurring costs for a service access charge ("SAC"), the cost of termination equipment and cable necessary to connect UNEs from Bell Atlantic to the CLEC's collocation cage; dedicated transit service ("DTS"), the cost of connecting two collocation cages within a Bell Atlantic wire center at the DS1 or DS3 level; and fiber service access charge ("FSAC"), the cost of a fiber connection between a POT frame and Bell Atlantic's fiber

distribution frame.[1] For the third category of costs, Bell Atlantic presents time and material costs for pulling and splicing cable from the manhole adjacent to the central office to the collocation cage (id. at 2-4).

Bell Atlantic notes that the costs presented in this portion of the proceeding are relevant to the placement of transmission equipment, such as multiplexing equipment, within a collocator's cage area. If a CLEC wished to house other equipment, such as digital switching, in its collocation area, other expenses might be incurred, and Bell Atlantic would identify any additional costs at the time a CLEC made such a request (Exh. BA-C-6, at 2-3).

A. NRC Method

NRCs consist of expenses incurred to construct and install cage facilities and POT frames, including (1) contractor expenses for the construction of the collocation frame, and (2) administrative and engineering costs associated with the collocation application and site preparation (id.).

The basis for Bell Atlantic's NRC cage costs is its recent experience in building 300 square foot collocation cages for CLECs. It relied on ten such examples, four each from the metro and suburban density zones and two from the urban density zone. Since Bell Atlantic has no experience with collocation projects in the rural density zone, it assumed that the NRCs for that zone would be equal to those of the suburban zone (Exh. BA-C-7, at 1).

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[1] Bell Atlantic's study when filed included a fourth service, the Customer Interface Panel ("CIP"). Bell Atlantic withdrew this service offering in response to a decision of the Eighth Circuit Court of Appeals (Bell Atlantic Brief at 15 n.9).

Bell Atlantic developed a cost for a 100 square foot cage as follows. It assumed that the fixed costs associated with a 100 square foot cage were equal to that of a 300 square foot cage. To determine the variable cost associated with a 100 square foot cage, the average variable cost of a 300 square foot cage was multiplied by a factor of 54 percent, representing the various possible physical configurations of cages within a collocation space in a central office[2] (id. at 2-3).

The basis of the NRCs for the POT frame is the most recent vendor material prices for the frame and the associated installation hardware (id. at 3). Further, engineering and administration costs used in the NRCs include Bell Atlantic's estimates of expenses associated with application processing, and engineering and real estate labor hours (id. at 4).

B. Recurring Cost Method

The recurring costs included in the cost study consist of three components: (1) cost factors relating to the POT frame, (2) building costs associated with the space occupied by the collocation cages, and (3) power plant costs for DC power delivered to the collocation node (id.).

In estimating recurring costs for the POT frame, Bell Atlantic multiplied the installed investment of the POT frame by carrying charge factors which include building investment and cost factors, and joint, common, and ad valorem factors. Bell Atlantic used a number of cost factors approved by the Department in the Phase 4 Order, and it also developed some new factors for this study (id.).

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[2] The 54 percent factor reflects the fact that some cages will not need to have four sides of caging, as they will abut an exterior wall of the collocation space.

For each of the density zones, the building costs per square foot were calculated by dividing current building investment in each central office wire center by the assignable square feet available in the building, yielding a building investment per assignable square foot. This figure was multiplied by a carrying charge factor to yield a cost per square foot (id.).

The DC power cost was developed using engineering estimates of power plant costs. Bell Atlantic presented two levels of charges, one in which the CLECs requested a DC power requirement that exceeds 60 amps, and one in which the power requirement is 60 amps or less. The latter is assumed to require the installation of a battery distribution fuse bay, while the former is assumed to connect directly with the main power plant in the central office. The investment amounts used in this portion of the study are based on recent vendor material prices for the installation of the type of power plant that would currently be ordered by Bell Atlantic (id.). Bell Atlantic identified the investment in DC power plant, then applied an installation factor, carrying charge factor, building factor, building carrying charge and joint and common factors to compute an annual recurring cost per amp for each density zone (id.).

Bell Atlantic calculated recurring costs for SAC, DTS, and FSAC. The SAC is a composite of a termination panel and cabling costs for voice grade, DS1, and DS3 circuits. Investment figures are determined, and then various loading factors are applied to produce a monthly recurring cost. The DTS is set equal to two SACs. The FSAC is based on the costs of the termination shelf located in the POT frame, the light guide cross-connection housings located in Bell Atlantic's fiber distribution frame, and a 144-conductor connecting cable, to which

various loading factors are applied to produce a monthly recurring cost on a per fiber basis (id. at second pages 1-2).

III. COST STUDY ISSUES

AT&T and MCI ("the CLECs") offer criticisms of Bell Atlantic's costs study, stating that their results inflated NRCs and recurring costs for collocation. We summarize their concerns and Bell Atlantic's responses and indicate our findings in this section.

A. TELRIC Methodology

1. Positions of the Parties

The CLECs assert that Bell Atlantic's cost study disregards TELRIC principles and does not comply with the TELRIC standards set forth in the Department's Phase 4 Order, which require use of forward-looking costs that reflect least cost most efficient technologies currently available. According to the CLECs, Bell Atlantic simply took a group of contractor proposals that reflected its own historical experience in establishing a very small number of collocation cages and extrapolated from that experience to produce purported average costs for future installation. This approach, argue the CLECs, is entirely based on historical data and makes no pretense of attempting to determine forward looking costs. The CLECs argue that Bell Atlantic made no effort to determine whether any efficiencies and cost savings might be achieved in an environment in which Bell Atlantic is building a large number of facilities in all of its central offices, instead of a small number of isolated collocation installations (AT&T Brief at 5-7; MCI Brief at 9). The CLECs also assert that the actual cage costs used by Bell Atlantic do not represent the cost efficiencies that would result from an effectively competitive market, in which

construction companies would bid to do the construction work. Instead, the CLECs claim that the costs are based on a cost-plus pricing arrangement with a small group of preselected contractors (AT&T Brief at 6-7; MCI Brief at 9-10; AT&T Reply Brief at 2).

In addition, MCI states that Bell Atlantic's collocation cost study does not comply with TELRIC standards because Bell Atlantic has included demolition costs in the construction cost figures (MCI Brief at 5). Furthermore, MCI asserts that the contractor cage construction proposals relied on by Bell Atlantic are unreviewable, which makes them ill-suited as a basis for findings and rulings on the forward-looking cost of collocation (id. at 11-12).

Bell Atlantic states that its analysis constitutes a proper TELRIC cost study, and that its use of its most recent experience with the cost of providing physical collocation is a reasonable and conservative estimate of future costs, especially where there is no question as to the choice of technology included in the analysis (Bell Atlantic Brief at 3; Bell Atlantic Reply Brief at 4-6). Bell Atlantic further asserts that the record is devoid of any evidence to support the CLECs' contention that using historical data is inappropriate because of efficiencies to be gained through mass-production of collocation cages. Bell Atlantic likewise asserts that the suggestion that collocation space can be mass-produced is inconsistent with the record, in that the steps needed to meet the needs of the collocator include individualized activities that are incompatible with the notion of mass-production. In any event, states Bell Atlantic, it is impossible to project how many collocation spaces will be demanded by CLECs and to know in which wire centers they will be requested (Bell Atlantic Reply Brief at 4-6).

Bell Atlantic responds to arguments on the issue of a competitive procurement process by stating that it has had every incentive to ensure that vendor costs were as low as possible since the prices charged to collocators were set by tariff and the actual costs of the cage construction was borne by Bell Atlantic. It argues that hypothetical construction costs cannot substitute for actual costs, especially where there is no evidence that the actual costs represent inefficient construction techniques or that Bell Atlantic did not have the incentive to control costs (Bell Atlantic Reply Brief at 6).

On the issue of demolition costs, Bell Atlantic asserts that the actual demolition work identified in the cost study was a relatively insignificant amount at three wire centers included in the study (Bell Atlantic Brief at 6; Bell Atlantic Reply Brief at 6). Further, Bell Atlantic contends that any demolition work specifically required to install a collocation cage should be the responsibility of the party that caused the cost (i.e., the collocator) (Bell Atlantic Brief at 6).

2. Analysis and Findings

Our Phase 4 Order set forth the standard of review we used in evaluating Bell Atlantic's general TELRIC model in that portion of the proceeding. We reiterate it here as a guide in reviewing the current collocation cost study:

> To determine whether [Bell Atlantic's] proposed TELRIC study meets the standard set forth by the FCC, we must examine both the structure of the model and the inputs used in the model. With regard to the structure of the model, we must determine whether it is reviewable, i.e., whether it is possible to find and understand the financial and numerical relationships inherent in the model. We must also determine whether the structure itself provides a good representation of a reconstructed local network that will employ the most efficient technology for reasonably foreseeable capacity requirements. If the model is reviewable and

> accurately portrays the network we desire, we must determine whether the various financial inputs to the model are appropriate.
>
> Phase 4 Order, at 8-9.

Here, the structure of the cost "model" is reviewable; indeed, it is entirely transparent, based on clearly presented investment amounts and cost factors. While the parties may argue about the appropriateness of the particular amounts and factors, the manner in which they are used to create the final costs is clear.

Here, too, with one minor exception (POT bay end guards) which we shall discuss later, there is no dispute as to the appropriate technology that should be used in constructing a collocation facility. In essence, the collocation facility consists of a standard wire fence, which is used to make the collocation cage, and a series of cable racks, termination panels, and other standard telecommunications equipment. No party has yet argued that there is a new technology on the horizon that will supplant these commonly used items.

Rather, the CELCs' objections go to the question of whether Bell Atlantic has designed a financial model that reflects "reasonably foreseeable capacity requirements." Bell Atlantic has, for the most part, chosen to create a cost estimate for each collocation cage, installed one at a time, basing this estimate on recent actual one-at-a-time construction jobs. The CLECs argue that, given the large number of collocation cages that will be ordered in the future, Bell Atlantic should have made allowances for the efficiencies that could be obtained in planning, designing, and contracting out the work for multiple cages.

We find there is substantial merit in these objections. The one-at-a-time construction environment that serves as the basis for Bell Atlantic's collocation cost study does not properly

portray a construction program in which dozens or hundreds of collocation facilities will be built in Bell Atlantic central offices during the coming months and years. It would be reasonable to expect that there could be substantial efficiencies in the planning, design, procurement and construction process if one were planning for such multiple installations.

Bell Atlantic has argued that it does not know the demand for collocation cages, in that the demand is based on the actions of the CLECs. However, Bell Atlantic likewise cannot know with certainty the underlying demand for its own retail services, and yet Bell Atlantic plans and designs its networks and its procurement and construction program to achieve the greatest possible efficiencies given that uncertain demand. It was that overall investment philosophy which served as the basis for Bell Atlantic's TELRIC studies approved in the Phase 4 Order (See, e.g., Tr. 8, at 218-222, 251-254; Tr. 9, at 46-50). Here, the CLECs should expect no less. While there is, as all acknowledge, an element of customization in the construction of collocation cages, there are also common functions of planning, design and procurement subject to the economies of scale of multiple installations. The TELRIC model used by Bell Atlantic must be based on the assumption that multiple collocation cages will be installed in the near future, and that Bell Atlantic's planning, design, procurement, and construction processes will take that fact into account. Unfortunately, the collocation cost study does not take into account this factor, and the result is likely to inflate the TELRIC of collocation facilities that would be charged to the CLECs.

We turn next to AT&T's and MCI's argument that the historic costs used by Bell Atlantic of the one-at-a-time jobs themselves are not as attractive as those that could be obtained in a

more competitive construction environment. We agree. The actual procurement process used by Bell Atlantic does not act to create the lowest possible costs, even in the one-at-a-time environment assumed in the cost study. The procurement process used by Bell Atlantic creates a prequalified group of contractors, who meet Bell Atlantic's technical qualification and agree to live within certain profit and overhead rates, from which each collocation job is awarded. This process does not include competitive bidding (Tr. 19, at 91-92).

We understand Bell Atlantic's need to prequalify construction companies which are to work in the highly complex world of central offices, but that prequalification need not result in an absence of competition for specific construction jobs. The fact that Bell Atlantic's prequalified contractors have agreed to limitations on their profit and overhead rates in no way guarantees that the material and construction costs included in their final invoices reflect the influence of competition. Overhead and profit that are based on percentages of direct costs might actually tend to reduce the incentive of the chosen contractor to control the direct material and labor costs associated with any given construction job (see Exh. MCI-C-1, at 3-4).

Bell Atlantic's argument that it has been sensitive to construction costs in the past because it was offering a tariffed service, in which Bell Atlantic was at risk for any cost overruns, is not supported by the transcript reference it cites, which refers to Bell Atlantic's risk of future cost overruns (Tr. 29, at 62). Even if such cost sensitivity applied to past practices, though, it does not affect our conclusion here. It would simply lend credence to the conclusion that Bell Atlantic has sought to bring costs in at a level covered by the tariff without necessarily attempting to minimize costs.

Finally, we turn to MCI's argument that Bell Atlantic has not adopted a forward-looking cost method. MCI argues that Bell Atlantic has included demolition-related costs in its cost studies, and asserts that to do so is inconsistent with TELRIC principles. We agree. The TELRIC methodology should not include allowances for demolition-related costs. The presumption of the FCC's forward-looking costing approach is that a new network is being built to offer collocation, not that an old network is being reconfigured to make space for collocation. Though the TELRIC study presumes the location of central offices will not change, pre-existing conditions within those central offices are irrelevant to the costing method. Phase 4 Order, at 8. Accordingly, demolition costs must not be included in the Bell Atlantic study.

We set forth Bell Atlantic's obligations to address our findings above in a compliance filing in Section V, below. For now, we turn to other aspects of the cost study that have engendered criticism from the CLECs.

B. Nonrecurring Costs

In the above section, we addressed certain overriding aspects of the CLECs concerns about the design of the collocation cost study and the effect that design has on the results produced by Bell Atlantic. Here, we turn to more detailed suggestions by MCI and AT&T with regard to the nonrecurring portion of the cost study.

1. POT Bay End Guards

MCI states that Bell Atlantic has overstated the costs of a POT bay by assuming the use of two "end guards" for each POT bay, at a cost of $272, out of a total POT bay investment of $813 (MCI Brief at 17). According to Mr. Bissell, under efficient construction practices, POT

bays would be built in a row, thus reducing the number of end guards per POT bay. He therefore proposes to reduce the average cost of a POT bay by the cost of one end guard, or $136 (id.; Exh. MCI-C-2, at 4). Bell Atlantic contends that the configuration assumed in the study -- two non-contiguous POT frames, requiring two sets of end guards -- is an efficient design consistent with sound engineering practice and that the adjustment proposed by MCI is de minimis (Bell Atlantic Brief at 9).

While the adjustment proposed here is small, we find that MCI has made a more persuasive case on this item than Bell Atlantic. Mr. Bissell explained that his approach to the design of the POT bay would make more efficient use of common cable rack and common lighting and would take less floor space than Bell Atlantic's approach (Tr. 29, at 65; Cf. Tr. 29, at 44-45). Accordingly, we accept MCI's recommendation as the basis for the cost method with regard to this component of the collocation facility.

2. Fully Assigned Labor Rates

AT&T argues that Bell Atlantic has improperly used fully assigned labor rates in its nonrecurring cost calculation. Citing another portion of this Consolidated Arbitration proceeding in which the general issue of nonrecurring charges is being investigated, AT&T notes that Bell Atlantic admitted that use of fully assigned labor rates would result in double recovery of administrative and support expenses, which are already accounted for in the administrative factors used in the previously filed TELRIC studies for UNEs (AT&T Brief at 8-9, citing Tr. 21, at 15). In that proceeding, Bell Atlantic filed a revised cost study using directly assigned labor

rates rather than fully assigned labor rates. In this case, too, says AT&T, Bell Atlantic should employ only directly assigned labor rates (id.).

Bell Atlantic responds that AT&T has misconstrued the testimony from another part of the proceeding and has misapplied it to this cost study. In the general NRC portion of the case, says Bell Atlantic, Bell Atlantic noted that the provisioning expenses associated with those nonrecurring costs may be double-counted if fully assigned labor rates were included, because those expenses were already accounted for in Bell Atlantic's directly attributable cost factors used in the UNE TELRIC studies. In the collocation study, though, the administration and support labor dollars were not included in the derivation of the administrative factor used in the UNE TELRIC studies. Bell Atlantic says that collocation labor costs are charged to capital accounts -- as opposed to expense accounts -- and therefore collocation labor is not otherwise accounted for in any expense factor. Accordingly, says Bell Atlantic, the collocation study should use fully assigned labor rates (Bell Atlantic Reply Brief at 9-10).

In analyzing this issue, we reviewed the UNE TELRIC studies, in which Bell Atlantic (then d/b/a "NYNEX") developed administrative (or "administrative and support") factors that it applied to specific UNE investment costs. The administrative and support factors served as a component of the total recurring UNE costs, and were based upon the ratio of administrative and support expenses to Bell Atlantic's investments. The administrative and support factors were further modified by an efficiency factor which was set by the Department (Phase 4 Order, at 58-61, Phase 4-A Order, at 6-8; NYNEX TELRIC Compliance Filing, Att. E, at 23 (February 14, 1997)). In its current general NRC filing, Bell Atlantic determined, after

discovery had begun, that the use of fully assigned labor rates in the NRC study would result in the double recovery of administrative and support expenses because those expenses are already accounted for in the administrative and support factors used in the UNE recurring cost studies. As a result, Bell Atlantic has said that it will use directly assigned, rather than fully assigned, labor rates in its UNE NRC study (Tr. 21, at 15; NRC IR AT&T 2-31).

Here, Bell Atlantic argues that because collocation labor costs are charged to capital accounts, they are not accounted for in any expense factor. Bell Atlantic's distinction with regard to UNE labor costs in Bell Atlantic's TELRIC studies is not valid. UNE labor costs are likewise charged to capital accounts and are not included in an expense factor. The administrative and support factor in the TELRIC compliance filing fully accounts for all of Bell Atlantic's administrative and support expenses, and through it those expenses have been fully assigned to the UNE recurring costs. As such, the administrative and support expenses should not be assigned to either the general NRCs or the collocation NRCs included in this portion of the case.

On a different issue, MCI recommends a reduction in the labor rates used by Bell Atlantic to remove the "NYNEX performance incentive." MCI argues that this performance incentive may not be earned in any given year and therefore should not be included in the labor rates used to determine the costs of collocation (MCI Brief at 16). Bell Atlantic responds that such payments are part of its overall compensation package and represent a reasonable employee incentive to ensure good performance (Bell Atlantic Reply Brief at 10). We agree with Bell

Atlantic that this type of performance incentive is a normal and customary component of labor costs.

C. Recurring Costs

The CLECs have also raised concerns about a number of the items in Bell Atlantic's estimated recurring costs for collocation. We address those concerns in this section.

1. Power Costs -- Method

As noted above, Bell Atlantic's collocation cost study contains a cost element that accounts for the cost of DC power used by the collocators' equipment.[3] Bell Atlantic has proposed a cost per DC amp that is based on assumptions concerning the investment costs for a DC power plant, including micro-processor plant, rectifiers, batteries, automatic breakers, the power distribution cabinet, and the emergency diesel/turbine. The investments were stated on a dollars-per-amp basis and were inflated by an installation factor, carrying charge factor, building factor, building carrying charge, and joint and common factors to yield an annual recurring charge per amp for each density zone. This annual charge would be applied on a per-amp basis to all collocation cages requiring over 60 amps, which are connected directly to the main power plant. For power requirements under 60 amps, a battery distribution fuse bay "BDFB" was also required, and the per-amp recurring costs associated with the BDFB are included in the recurring costs for those configurations (Bell Atlantic Brief at 12).

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[3] This item is distinguished from the power that would be used for lighting, ventilation, and other building functions in the central office structure in which the collocation cage is located, which is recovered in the recurring charge for use of floor space in the building.

AT&T argues that Bell Atlantic has not demonstrated that there is any incremental cost associated with the power needs of the equipment within collocation cages, and therefore Bell Atlantic should not be permitted to include in the TELRIC methodology any charge for such costs (AT&T Brief at 10-11; AT&T Reply Brief at 3). MCI makes a similar argument, saying that there is nothing in the record to indicate that collocation alone or in combination with existing demand will cause Bell Atlantic to replace its existing power facilities. MCI states that, where Bell Atlantic has used existing buildings to accommodate collocation for purposes of its cost study, it should be required to use its existing power plant, at least as a matter of consistency (MCI Brief at 19).

MCI also argues that these same power costs are already being recovered in full from other rates and charges established by Bell Atlantic in other TELRIC filings or through its price cap scheme (id. at 19-20; MCI Reply Brief at 5). AT&T likewise asserts that, in its original TELRIC study, Bell Atlantic allocated the full cost of the DC power equipment across the various UNEs (AT&T Brief at 11; AT&T Reply Brief at 2-3).

Bell Atlantic offers a different explanation, noting that the power cost in this study is being derived to charge collocators for power according to their specific amperage requirement. In contrast, it notes, the power factor included in the earlier UNE TELRIC studies is the ratio of incremental power investment to incremental plant investment and was developed to provide a relationship between plant-related services (e.g., switching) and the need for a corresponding power investment. Here, says Bell Atlantic, the level of power demanded is determined by the collocator based on the equipment that collocator decides to put in the cage, and is not assumed

to be a percentage of the investment cost. In fact, notes Bell Atlantic, this calculation is likely to result in a lower power cost to collocators than if the investment-related power factor were used (Bell Atlantic Brief at 13-14).

We find that AT&T and MCI have misconstrued the purpose of this part of the collocation cost study. The purpose of developing a cost per amp for DC power for collocator's equipment is to present a forward-looking view of the cost of power needed for the reliable operation of that equipment. This is an essential and appropriate part of a TELRIC study. It is uncontroverted that the collocators' equipment will draw power, and it is entirely appropriate for Bell Atlantic to view that demand as incremental to the demand for power from its own plant-related services and facilities, even though one or more collocation cages in a given central office might not require Bell Atlantic to enhance its existing power supply in that central office. In this proceeding, we are not designing specific facilities; the TELRIC study is a theoretical construct of a rebuilt telecommunications network, in which each portion of that network must carry its own weight. See Phase 4 Order at 6-8.

Neither do we find the double-counting that is alleged by the CLECs. The power factor developed in the earlier phases of this proceeding did not reflect the power needs of the collocation equipment; it was used to establish a relationship between Bell Atlantic's incremental plant investment to provide UNEs and the incremental power investment associated with that plant investment. See Phase 4 Order. Here, the actual level of investment in the collocation cage is determined by the collocator and is owned by the collocator. Therefore, the use of the Bell Atlantic power factor for this investment is inappropriate, if for no other reason that the

actual level of investment cannot be known by Bell Atlantic, as it is under the control of the CLEC.

Theoretically, the general power factor could be applied to the CLEC's investment, if the CLEC wished to make that figure known to Bell Atlantic, but AT&T and MCI are not making this proposal. Instead, they wish the collocation equipment to be freed of any associated power charge, which, as we have just noted, would be improper. In any event, in terms of a cost study method, the lack of knowledge about the level of investment costs by the collocators requires us to employ another way to estimate power costs. The Bell Atlantic method is sound, because it properly accounts for the incremental energy costs associated with providing power to the CLEC's equipment.

2. Power Costs -- Inputs

Beyond this methodological question, MCI asserts that the actual costs used by Bell Atlantic in estimating power equipment investment are incorrect, unreviewable, or inconsistent. MCI asserts that Bell Atlantic has used information from past installation work without regard to whether the specific work is consistent with TELRIC pricing. At least one $10,000 cost, argues MCI, is a pure assumption with no backup. Further, the installation factors used by Bell Atlantic assumed company warehousing, whereas the investment cost contained contractor warehousing, creating a double counting (MCI Brief at 20).

MCI also argues that the installation factor used by Bell Atlantic to develop its power costs should be reduced from 3.1963 to 1.6. MCI cites Mr. Bissell's testimony in support of this lower factor, saying that MCI's installation factor is tied to specific work activity with power

plant construction, and is not distorted by combining together multiple investment and installation activities as was done by Bell Atlantic in its installation factor. Specifically, MCI contends that the use of the higher installation factor for the cable racking portion of the power supply is not justified, because much of the costs included by Bell Atlantic related to the cost of installing racking to digital switching, and not to a power plant (MCI Brief at 23-25).

On the question of the installation factor, Bell Atlantic asserts that Mr. Bissell has ignored a large number of costs associated with the installation of DC electricity and that his approach appears to be analytically flawed because it includes only costs that would be incurred by adding a small amount of capacity to an existing power plant. Bell Atlantic argues that the installation factor was developed using all relevant costs associated with providing DC power in Massachusetts, in a manner consistent with previous TELRIC studies (Bell Atlantic Brief at 13).

MCI further asserts that the application of both a power and building factor to the DC equipment investment costs may result in double-counting. Accordingly, MCI recommends a reduction of the power factor from 1.0565 to 1.0 and an elimination of the building factor (MCI Brief at 23). Bell Atlantic responds that MCI ignores the documentation of actual costs that have been paid by Bell Atlantic to third-party vendors for power service to cages. Bell Atlantic notes that it provided detailed work packages for each collocation project included in the cost study, which includes the provision of power-related items (Bell Atlantic Brief at 6-7).

Regarding MCI's proposal on the power and building factors, Bell Atlantic responds that MCI misconstrues the theory and structure of forward-looking cost studies. The power and building factors should be applied to the DC equipment investment costs, says Bell Atlantic,

since those factors are used in the TELRIC methodology to reflect the relationship between plant-related services and the need for corresponding power and building investment. Further, Bell Atlantic notes that there is no allocation or explicit recovery of a fixed level of costs between services that could support the concept of a double recovery (id.).

We agree with Bell Atlantic's conclusions for the reasons it has stated. Bell Atlantic has provided specific documentation of power-related costs, has calculated an installation factor in accordance with the TELRIC methodology adopted by the Department in the Phase 4 Order, and has properly applied power and building factors to investment in accordance with the TELRIC methodology.

3. Other Installation Factors

MCI argues that the installation factor used to determine the POT frame, SAC, and FSAC should be reduced from 1.4254 to 1.3. MCI claims that Mr. Bissell obtained more precise information than did Bell Atlantic on installation costs applicable to the specific type of work associated with the engineering, furnishing, and installation of equipment similar to the type identified by Bell Atlantic in its cost study. MCI argues that Bell Atlantic's higher installation factor reflects more complicated digital equipment installation work by more expensive vendors than would be used to install collocation-related equipment (MCI Brief at 24).

Bell Atlantic responds that it relied on actual data concerning the relationship between the total installed cost of equipment and the cost of equipment itself (Bell Atlantic Brief at 9-10; Bell Atlantic Reply Brief at 15).

We find that Bell Atlantic has made a persuasive case that its proposed installation factor is reasonable. Mr. Grenier clearly explained the components of Bell Atlantic's factor. He pointed out that if he had developed an installation factor based solely on hardwired equipment, it would have been higher than the number he used. Instead, he adopted an approach that represented a composite of hardwire equipment installation costs and costs for "plug-in" installations, which resulted in a more conservative installation factor because "plug-in" installations are not necessarily applicable to the installation of a POT frame (Exh. BA-C-8, at 9-10). We accept the Bell Atlantic figure as valid.

4. Building Cost

AT&T argues that Bell Atlantic should be precluded from charging a building cost per square foot for collocation space. It states that such a charge is inconsistent with TELRIC principles because Bell Atlantic did not present any documentation that it will have to increase the size of its central offices to house collocation cages, and therefore there is no incremental building expense associated with collocation cages. AT&T also states that the rates for other UNEs already include the full cost of central office space, and under TELRIC methodology Bell Atlantic may not recover the same expense twice (AT&T Brief at 12).

Bell Atlantic responds that AT&T has erroneously interpreted the theory behind the TELRIC analysis (Bell Atlantic Reply Brief at 13-14). We agree. Building cost is an appropriate component to include in a TELRIC analysis because it is a forward-looking cost associated with a UNE. It is irrelevant whether a particular collocation cage or POT frame requires an addition to a Bell Atlantic central office; the TELRIC methodology requires each

network element to carry its own weight in the hypothetical reconstructed telecommunications network. The figures used by Bell Atlantic are properly applied here.

5. Dedicated Transit Service

MCI argues that Bell Atlantic has overstated the cost of DTS by basing it upon a doubling of the SAC, and that the charge for DTS should be no greater than the SAC. MCI states that unlike a SAC, which accounts for the connection of a collocator's cage to Bell Atlantic's cross connects, DTS is the charge to connect two collocators, where there is no need to connect to the Bell Atlantic network (MCI Brief at 24-25). Bell Atlantic responds that MCI ignores the fact that the cabling for DTS must conform to the physical configuration of cable-rack routes, which makes it necessary for Bell Atlantic to make two SAC connections to provide DTS (Bell Atlantic Brief at 18; Bell Atlantic Reply Brief at 15-16).

Since the SAC is essentially based on the average length of the connection from a collocation cage to the Bell Atlantic cross connect (Exh. MCI-1R-45(b), Att. 2; Tr. 19, at 74-75), and since the DTS must follow the same routing (i.e., from collocation cage to Bell Atlantic, and from Bell Atlantic to collocation cage), Bell Atlantic has correctly determined that its charge for DTS should be double the SAC. Accordingly, Bell Atlantic's proposal is accepted.

6. Utilization Factor

MCI notes that Bell Atlantic has proposed to use much lower utilization factors for SAC, DTS, and FSAC than it typically uses for inside plant. Mr. Bissell therefore recommends that the factors be increased from this 60-65 percent range to 80 percent, consistent with the 78 percent that Bell Atlantic uses for voice grade services (MCI Brief at 25).

Bell Atlantic responds that this adjustment is unwarranted and unsupported by record evidence. Bell Atlantic asserts that the study used utilization factors that are reasonable and, if anything, higher than actual utilization experience of the company (Bell Atlantic Reply Brief at 16).

We agree with Bell Atlantic that there is no support for MCI's proposed alteration to these utilization factors. In contrast, record evidence supports Bell Atlantic's figures. Mr. Grenier has persuasively testified that, at the 80 percent utilization suggested by Mr. Bissell, additional termination equipment would be warranted, which would actually lower the appropriate utilization factor (Exh. BA-C-8, at 10-11). Further, Mr. Grenier testified that site visits to wire centers where collocation has been provisioned reveal that, on average, utilization for all types of SACs is well below the rates included in the cost study (id.). Accordingly, we accept the Bell Atlantic utilization factors.

IV. TERMS AND CONDITIONS

A. Amortization of Nonrecurring Charge

AT&T and MCI object to paying nonrecurring charges for the costs associated with the construction of collocation cages. AT&T argues that these costs should be recovered over a multi-year period rather than as up-front fees. Permitting the up-front fees proposed by Bell Atlantic, argues AT&T, will discourage competition by increasing the risk of entering a market (AT&T Brief at 9). Likewise, MCI argues that Bell Atlantic should permit CLECs to pay for cage costs over a reasonable time, at least the duration of the initial term of the collocation lease agreement (MCI Brief at 26).

Bell Atlantic opposes these proposals, stating that this type of rate design would put the financial risk of collocation on Bell Atlantic without any commensurate upside benefit. It further states that the CLECs have not presented persuasive testimony as to how and why their approach is reasonable, necessary, or even less expensive for the collocator over the long-term (Bell Atlantic Reply Brief at 10).

The CLECs have not been clear as to whether their proposal to amortize the NRC over a period of years would carry with it a carrying charge for the unamortized balance, but we must assume that it would, to compensate Bell Atlantic for the delay in receiving revenues to which it is entitled upon constructing the collocation cage. We further assume that, as a condition of an extended payment of the NRC, Bell Atlantic would have recourse to a given CLEC in the event of a failure to pay its recurring or unamortized nonrecurring charges during the course of the amortization period. Such recourse might be termination of service to the CLEC through that cage, accompanied by the usual administrative and legal proceedings to collect bad debts. We therefore evaluate their proposal in light of these assumptions.

If Bell Atlantic is properly compensated for its time value of money and is provided avenues for recourse for nonpayment of charges, it should be neutral with regard to an amortization of the NRC over the initial contract period. Whether such a plan actually provides value to a given CLEC will depend on that CLEC's cost of money relative to that of Bell Atlantic and the CLEC's cash flow requirements. We agree with the CLECs that the opportunity to pay the NRC over time offers a low-risk way to enhance competition in the state by reducing a potential barrier to entry. Accordingly, Bell Atlantic should revise its terms and conditions to

give CLECs the option to pay the NRC as an initial payment or to amortize the NRC over the initial term of the collocation agreement. The latter option shall include the conditions that: (1) a carrying charge, equal to the overall cost of capital included in the TELRIC study (Phase 4 Order, at 52-53, Phase 4-A Order, at 6) shall be applied to the unamortized balance; and (2) failure by the CLEC to pay either the authorized recurring charges or the unamortized NRC may be subject to termination of service to the CLEC through that collocation cage and to the customary administrative and legal proceedings to collect bad debts.

B. Credit for Reuse

Bell Atlantic has also proposed a credit to vacating collocators for reused facilities (Exh. MCI-RC-17; Tr. 19, at 36-38). MCI supports this concept but states that Bell Atlantic has not fully articulated the rates, terms, and conditions under which this reuse credit will be provided. MCI offers suggestions as to how the credit should be applied, and asks for these items to be included in Bell Atlantic's compliance filing for review and approval (MCI Brief at 26-27). We adopt the concept of the reuse credit as a fair reallocation of costs from a subsequent user, and we also adopt MCI's request that the terms of the credit be included in Bell Atlantic's compliance filing. We further direct the parties meet to discuss and negotiate the terms of the credit to see if it is possible to reach agreement on this item before it is submitted in the compliance filing.

C. CLEC Purchase of POT Bay

Bell Atlantic has stated that it intends to allow a CLEC to buy its own POT bay to be located outside of the collocation cage (Tr. 19, at 34-35). MCI suggests that there should be an

adjustment to POT bay nonrecurring charges when a CLEC provides its own POT bay (MCI Brief at 18). Bell Atlantic agrees but distinguishes between two cases: (1) Bell Atlantic will credit the entire POT frame cost where a collocator places its POT frame within its collocation cage; and (2) Bell Atlantic will credit only the investment portion of the NRC of a POT frame where the POT bay purchased by the collocator is installed by Bell Atlantic on the common collocation floor (Bell Atlantic Reply Brief at 11). Bell Atlantic's proposal is consistent with the principles of cost causation, and we adopt it.

D. Changes in Collocation Policy

MCI notes that, during the course of this proceeding, the FCC issued a decision in which it directed incumbent local exchange carriers to modify their collocation practices. See FCC Second Report and Order and Memorandum Opinion and Order, FCC 96-333, CC Docket No. 96-98 (released August 8, 1996). Bell Atlantic has not yet made a filing in response to this order, and MCI requests that we require Bell Atlantic to submit any changes in collocation policy to the Department and to existing collocators at least 30 days in advance of their proposed effective date (MCI Brief at 27).

Bell Atlantic replies that this request is undefined, overly broad and beyond the scope of this portion of the proceeding. Bell Atlantic notes that under the negotiated interconnection agreements, any substantive changes to specific terms and procedures are subject to agreement by the parties to those agreements. Bell Atlantic expresses concern that day-to-day operational decisions could be construed as collocation policies, would be subject to a formal regulatory

process, and would therefore invoke an unnecessary and cumbersome process with regard to a potential dispute arising from an interconnection agreement (Bell Atlantic Reply Brief at 14-15).

We agree with Bell Atlantic. The negotiated and arbitrated interconnection agreements have provisions covering changes in practices, procedures, and regulation. Our hope and goal is that those agreements, rather than regulatory proceedings before the Department, will serve as the primary basis for the commercial relationships between the parties. The expectation of consultation and agreement within the context of the interconnection agreements, along with the dispute resolution procedures contained therein, provide the framework for the initial review of changes in collocation policy requested by MCI. Accordingly, we do not adopt MCI's proposal.

V. COMPLIANCE FILING

In the sections above, we have made a number of findings with regard to Bell Atlantic's collocation cost study. Bell Atlantic is directed to file a compliance filing making modifications to the study within two weeks of the date of this Order. In this section, we offer specific guidance to Bell Atlantic as to how to incorporate a number of our findings into its revised study. Any of our findings within the preceding sections not explicitly reviewed below should also be incorporated into the compliance filing.

A. One-at-a-time Planning and Design Adjustment

In Section III, A. above, we found that the TELRIC model used by Bell Atlantic must be based on the assumption that multiple collocation cages will be installed in the near future, and that it is reasonable to expect that there could be substantial efficiencies in the planning, design, procurement, and construction process if one were planning for such multiple installations.

However, the parties presented no record evidence on the extent to which the planning and design costs of collocation facilities could be reduced if the TELRIC model assumed multiple collocation cages instead of one-at-a-time construction. In another Order, we faced a similar problem, where we sought to impute the efficiencies that might be garnered by Bell Atlantic in the future. There, we were reviewing administrative and support functions, and concluded that a ten percent improvement in administrative efficiency was achievable during the period in which rates were likely to be in effect, basing our conclusion on a comparison with other Bell Operating Companies (Phase 4 Order, at 58-61; Phase 4-A, at 7). Here, we do not have a comparison group of companies. Nonetheless, we conclude that Bell Atlantic's cost should be reduced in the same manner to reflect construction of multiple collocation cages. We find that, in the absence of a historical record that would reflect the planning and design for a large number of collocation facilities, and given the forward-looking nature of TELRIC analysis, a reduction of ten percent in the number of hours required by Bell Atlantic employees to carry out these functions is a modest and achievable goal. Bell Atlantic is therefore directed to reduce by ten percent the number of hours of its employees' time in the cost study.

B. Competitive Bidding Adjustment

In a Section III. A. above, we found that the procurement process used by Bell Atlantic does not create the lowest costs. Likewise, the parties presented no record evidence on the extent to which competitive bidding would reduce the actual material and installation costs of collocation facilities. Given that the number of companies participating in such bidding will likely be limited to a rather small group of prequalified companies, our expectations for cost

reduction in overall bids are modest. Again, acknowledging the forward-looking nature of TELRIC analysis, we conclude that a five percent reduction provides a reasonable estimate of the likely savings that could result from this method of procuring outside contractors. Bell Atlantic shall therefore reduce all invoices used as the basis for the cost study by five percent.

C. Demolition Costs Adjustment

Bell Atlantic shall remove the demolition-related costs from the three wire centers in which those costs have been itemized.

D. POT Bay End Guards Adjustment

Bell Atlantic shall reduce the cost of a POT bay by the cost of one end guard.

E. Labor Rates Adjustment

Bell Atlantic shall revise the labor rates used in the study to include directly assigned, rather than fully assigned, labor rates.

F. Amortization of NRCs

Bell Atlantic shall set forth the payment schedule that would be expected of CLECs who choose to amortize the NRC over the initial collocation lease contract. As noted above, this payment schedule should employ the TELRIC-approved cost of money for Bell Atlantic.

VI. ORDER

After notice, hearing and consideration, it is

ORDERED: That the issues under consideration in this Phase 4-G be determined as set forth above; and it is

FURTHER ORDERED: That New England Telephone and Telegraph Company d/b/a Bell Atlantic shall file with the Department within 14 days of the date of this Order a compliance filing demonstrating modifications to its collocation cost study based upon the findings of this Order; and it is

FURTHER ORDERED: That the parties comply with all other directives contained herein.

By Order of the Department,

Janet Gail Besser, Chair

James Connelly, Commissioner

W. Robert Keating, Commissioner

Paul B. Vasington, Commissioner

A true copy
Attest:

MARY L. COTTRELL
Secretary